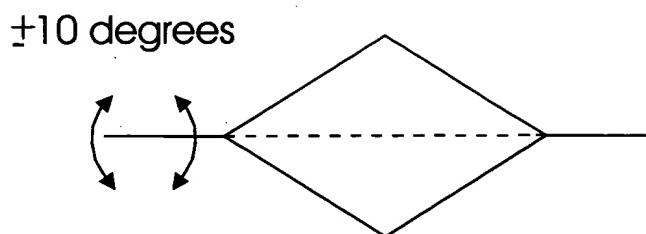




## Basic principles



$\pm 10$  degrees

Fig. 1

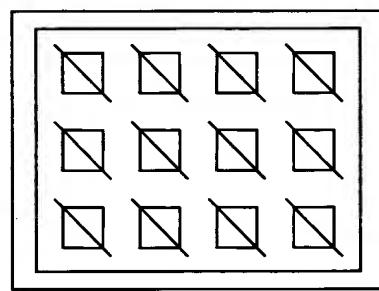
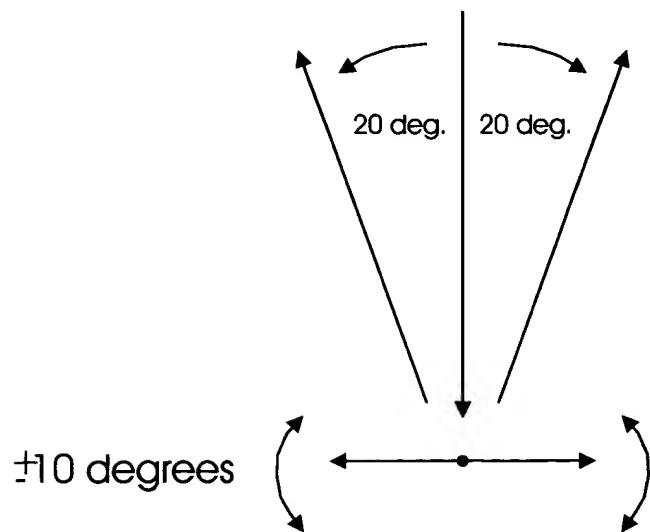


Fig. 2



$\pm 10$  degrees

Fig. 3



## Basic principles

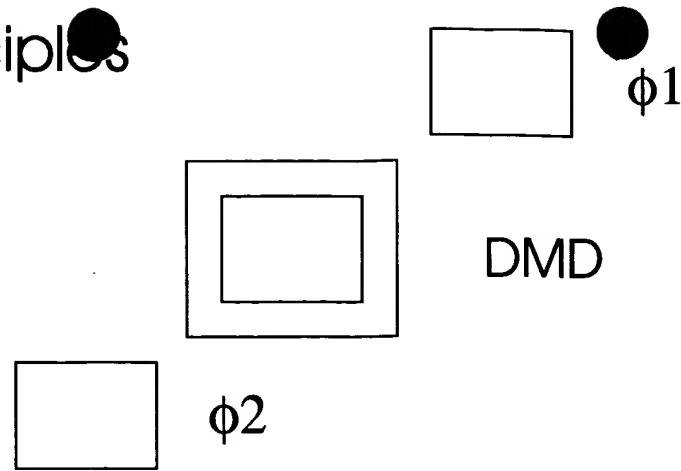


Fig. 4

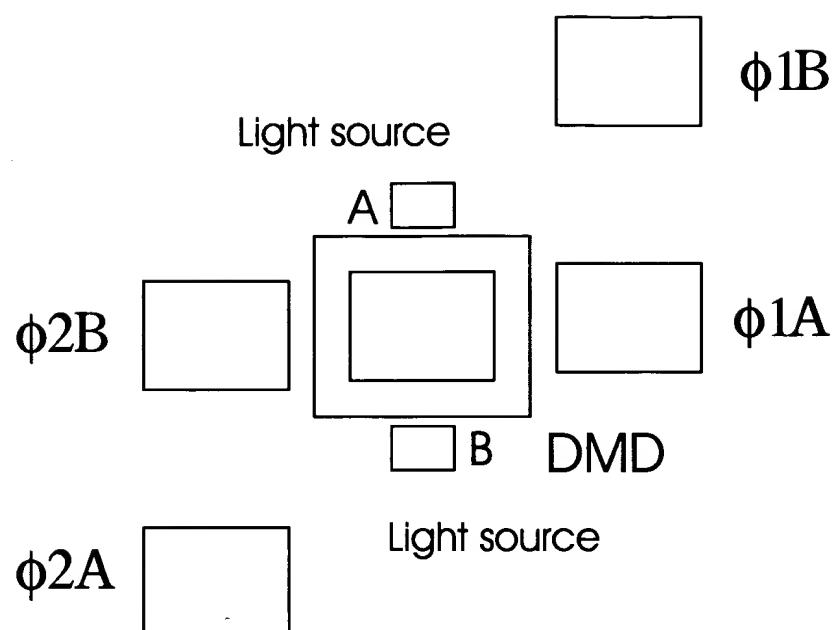


Fig. 5

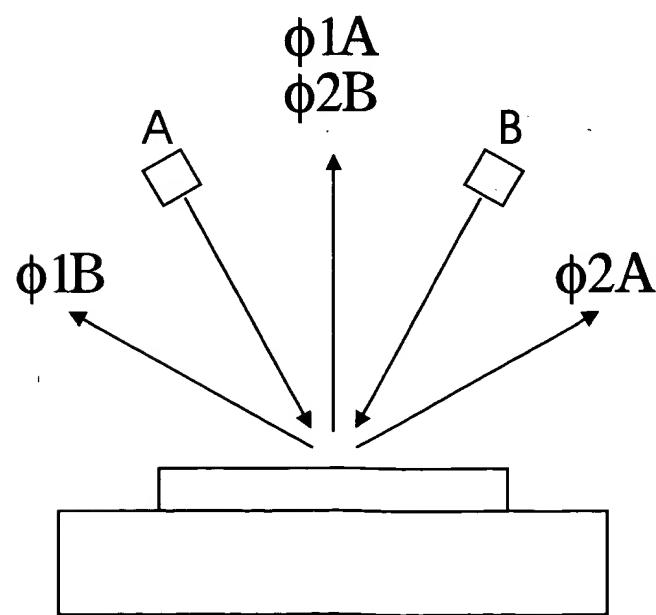


Fig. 6



## Mirror HMD - Single Stage

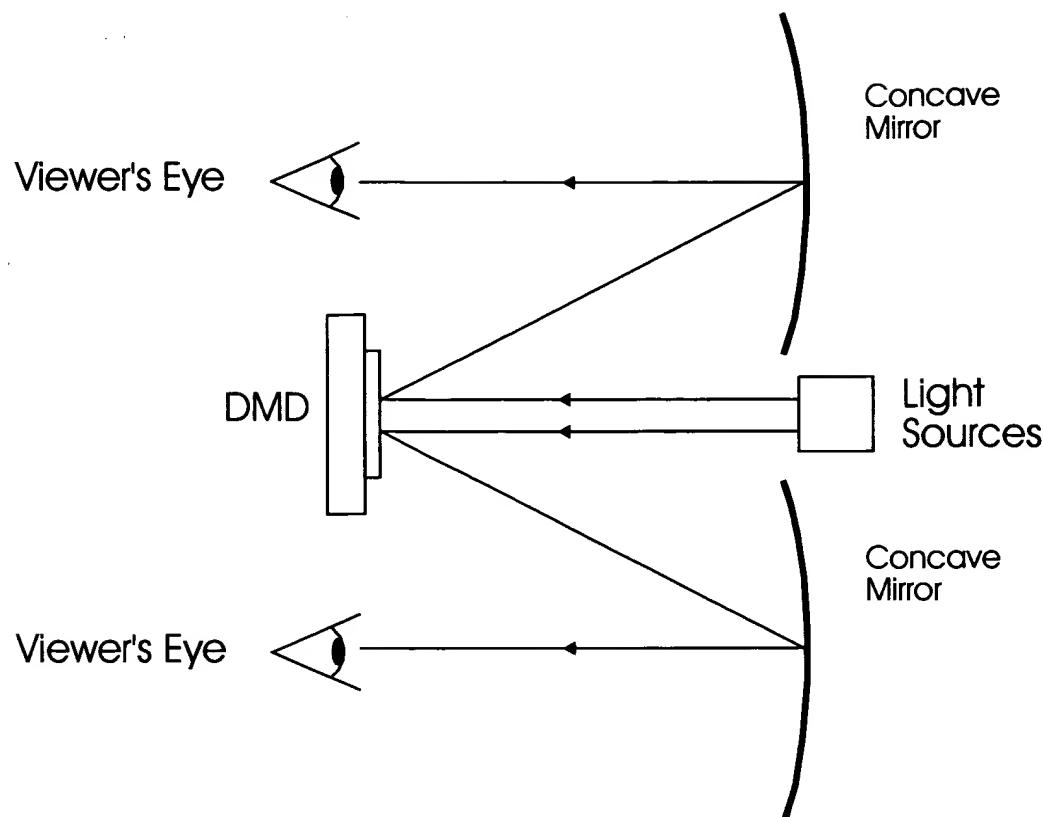


Fig. 7

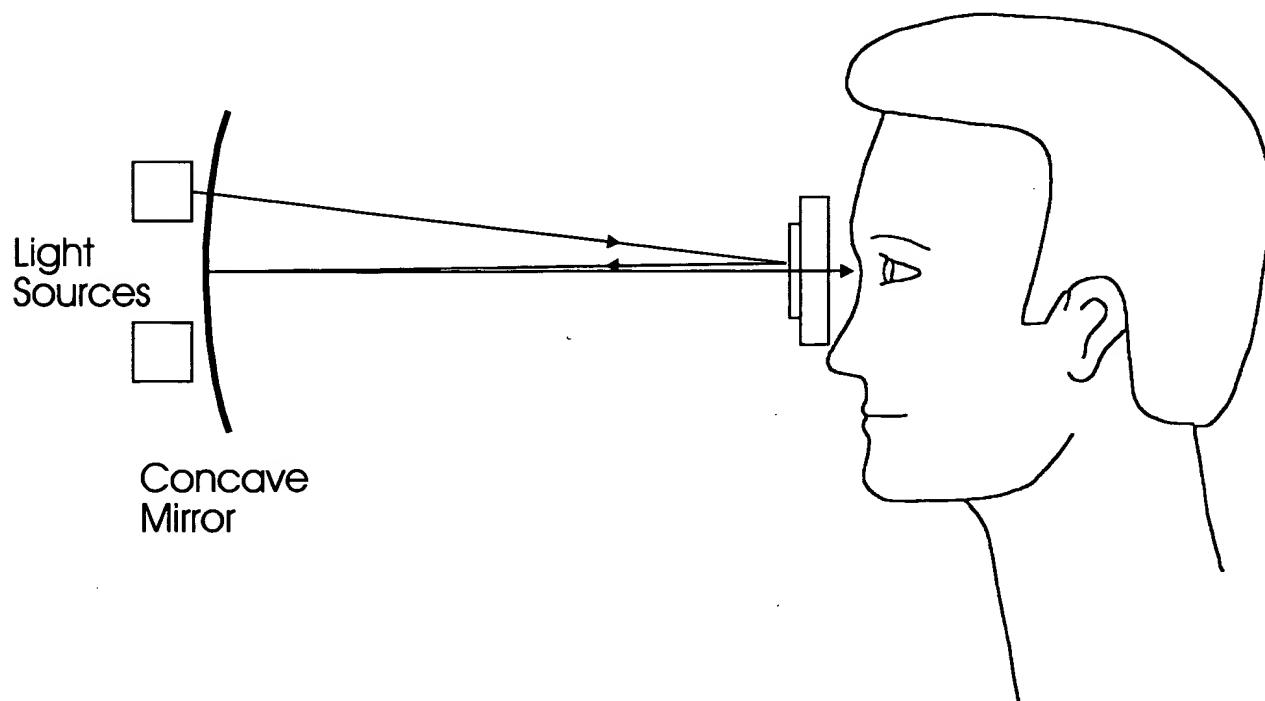


Fig. 8



## Mirror HMD - Two Stage

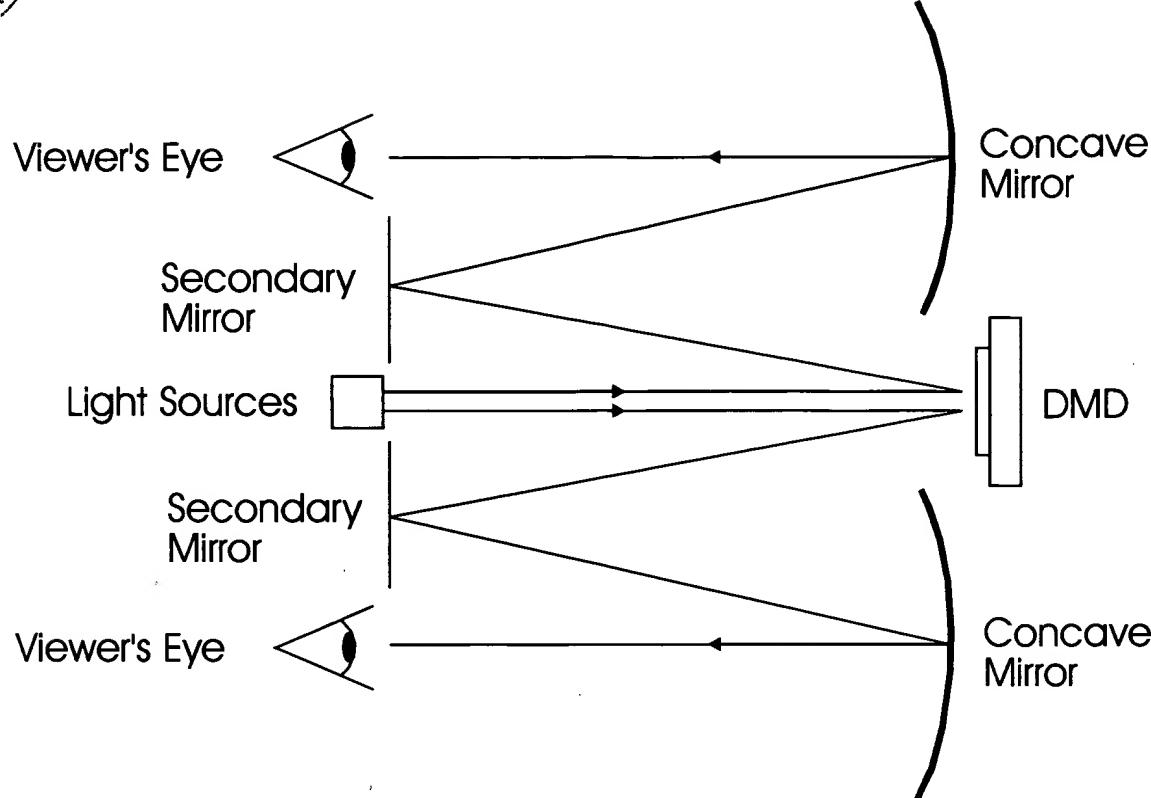


Fig. 9

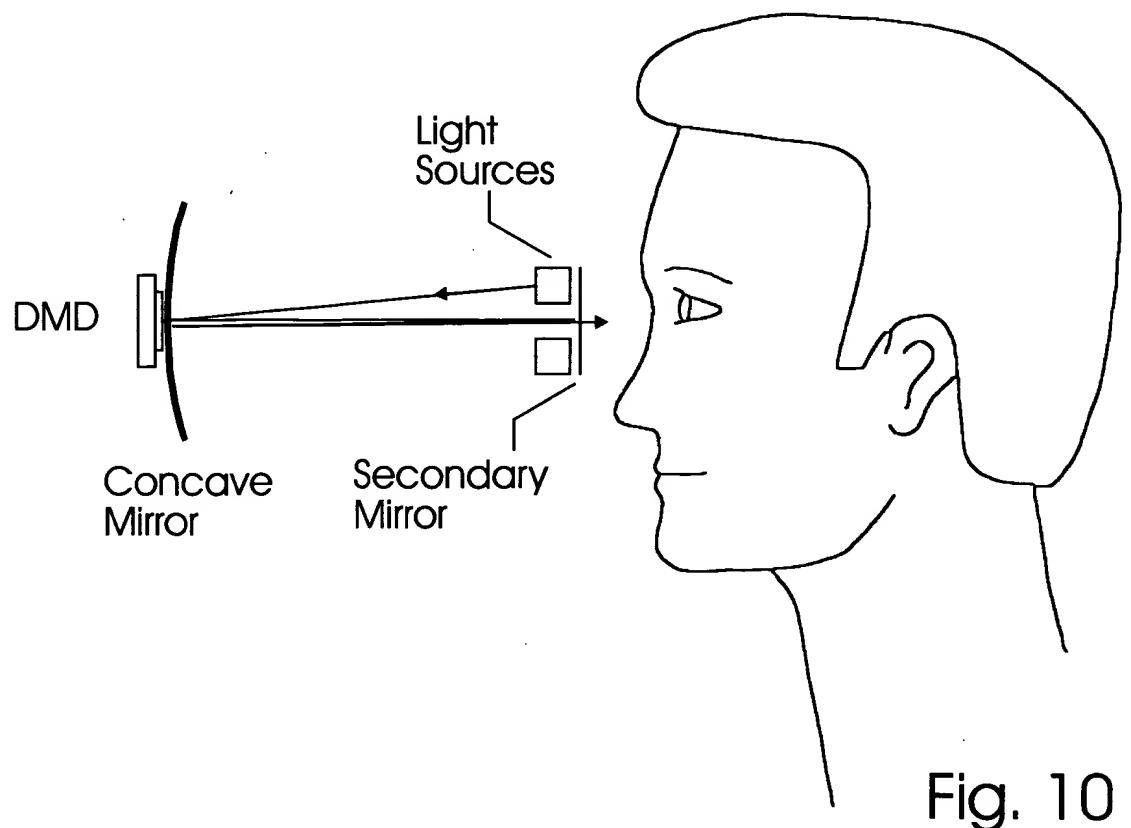


Fig. 10



Enhancement

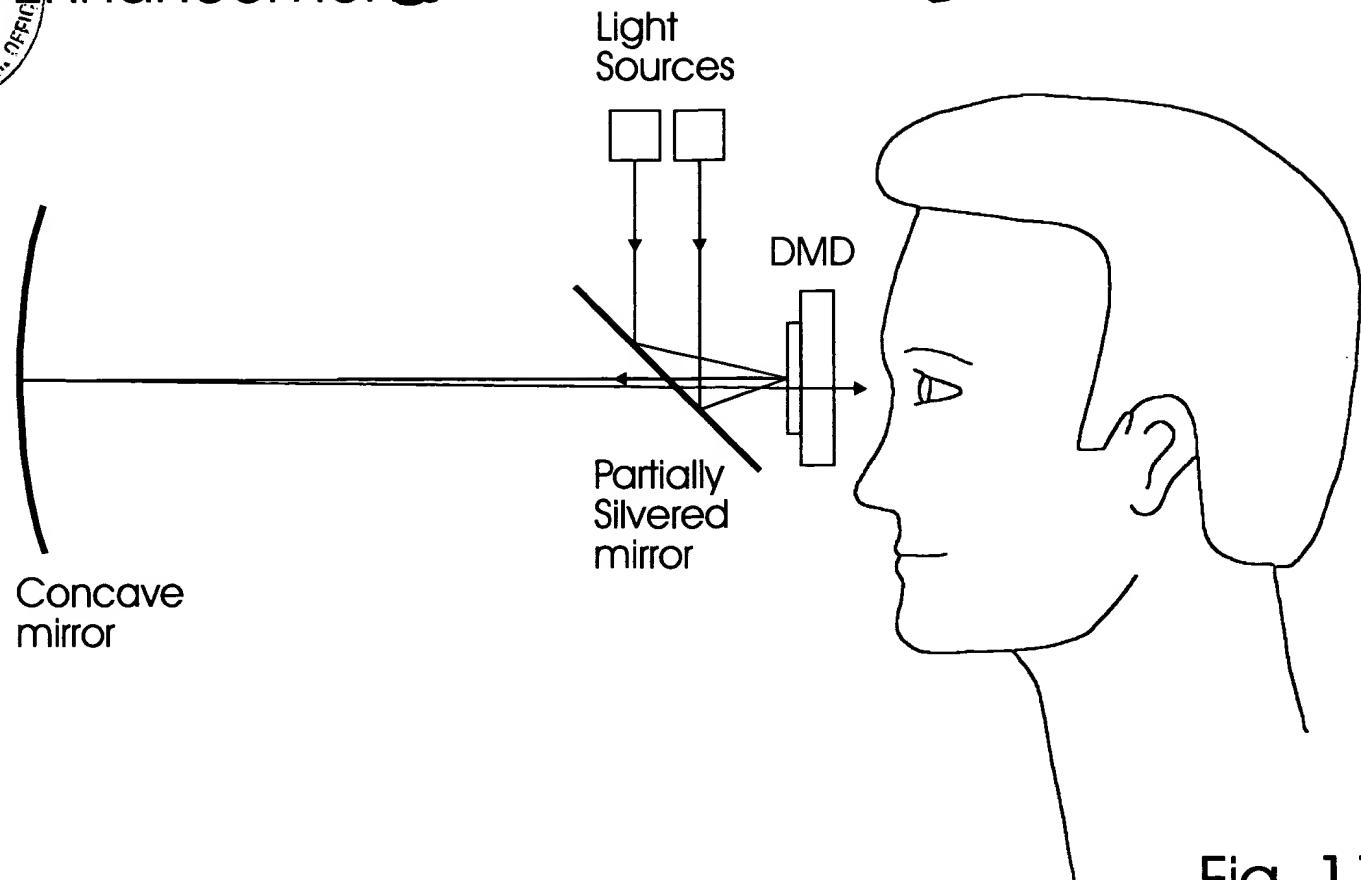


Fig. 11

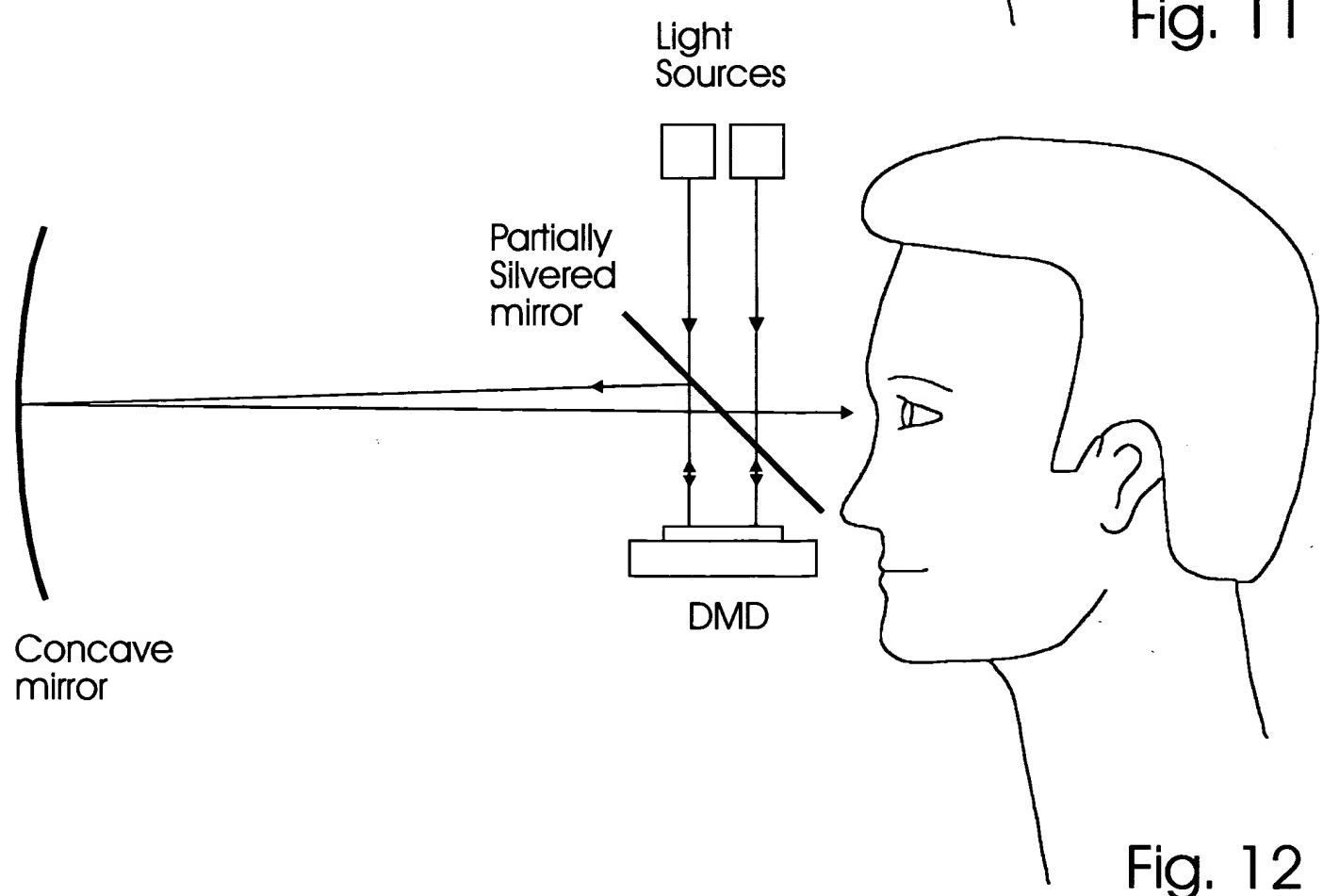


Fig. 12



## Enhancements

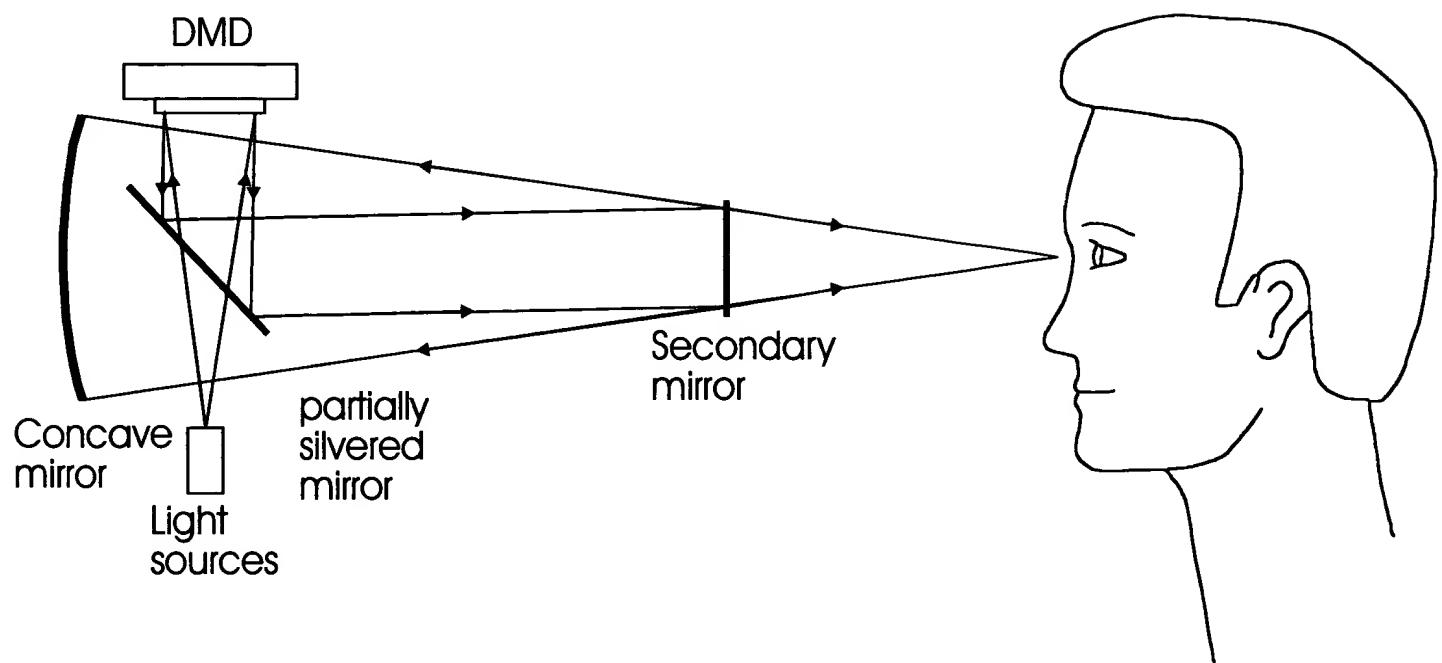


Fig. 13

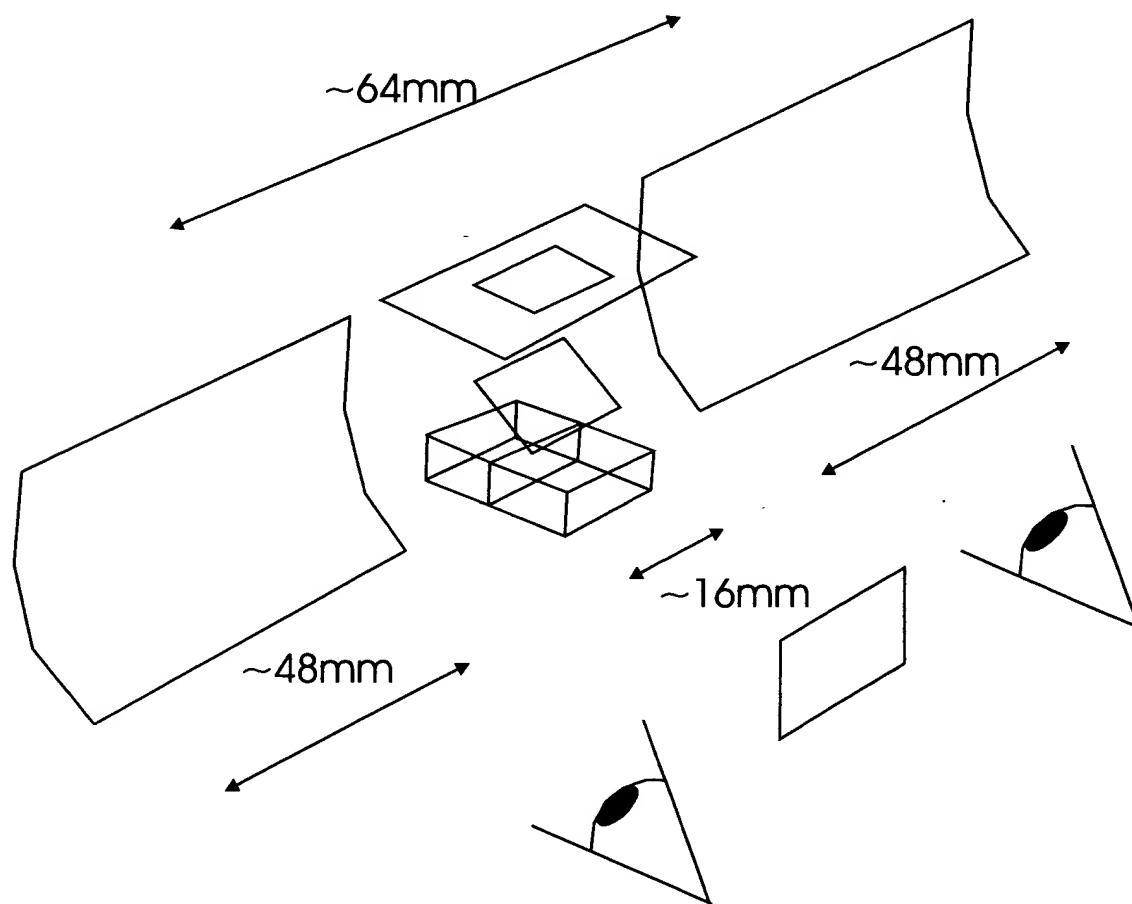


Fig. 14



## Dual DMD lens system

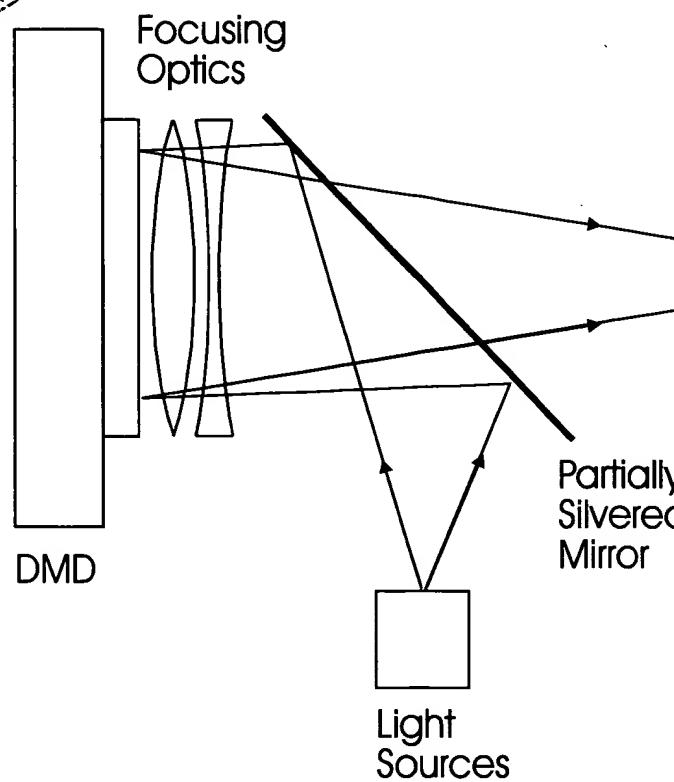


Fig. 15

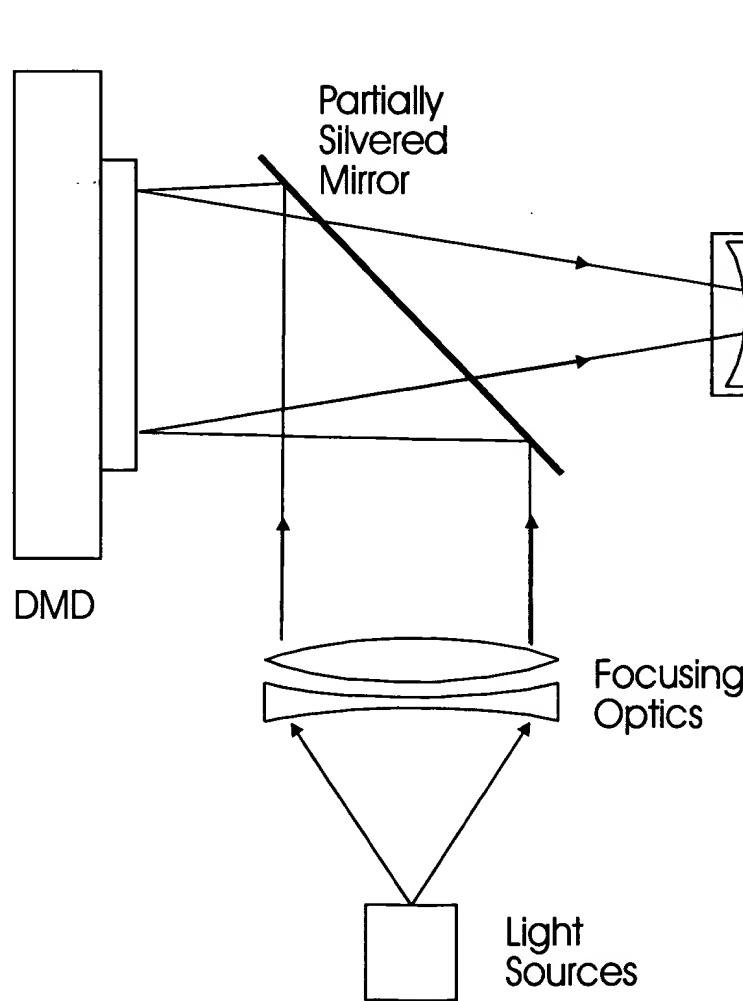


Fig. 16



## 2 stage dual mirror hybrid HMD

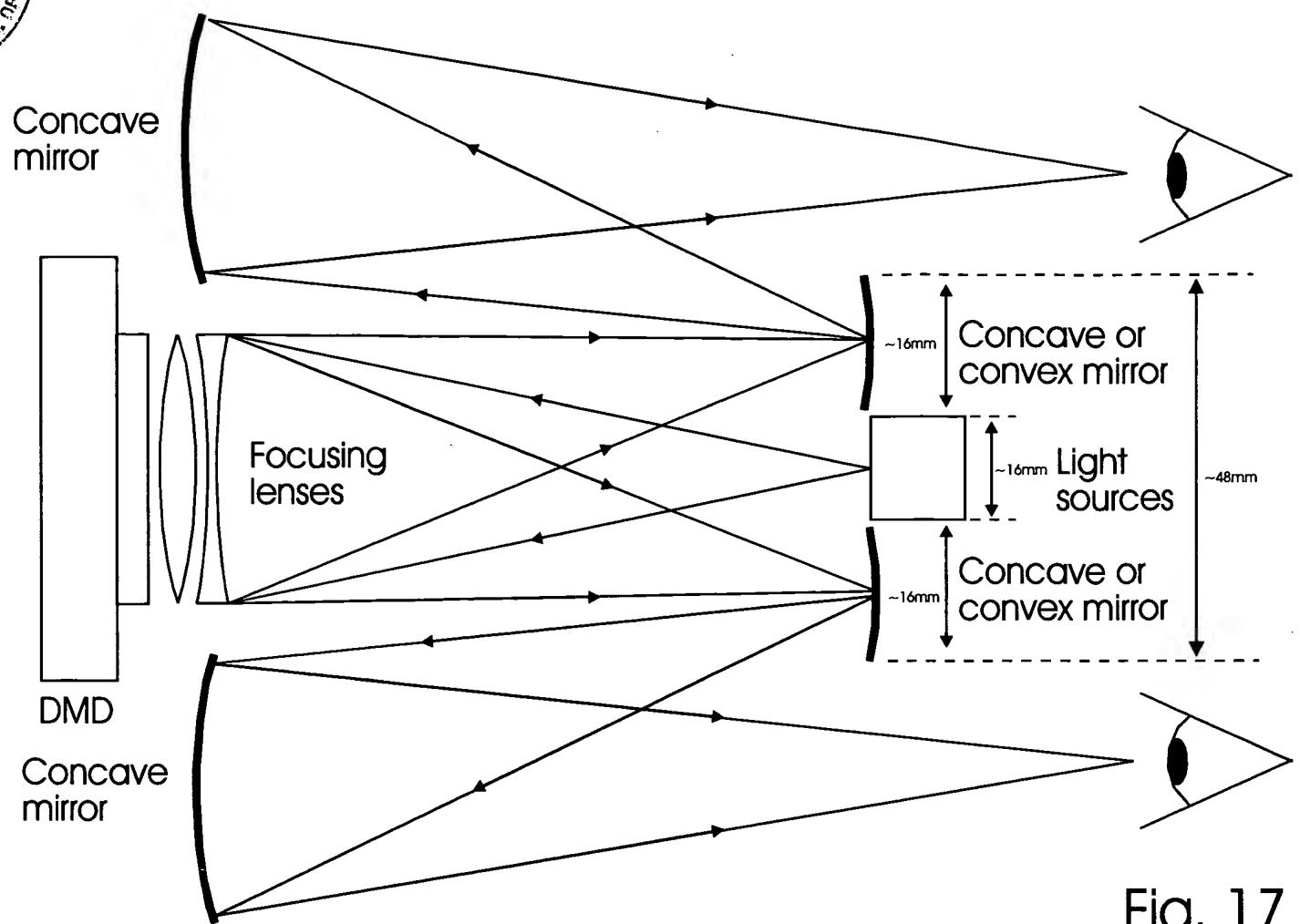


Fig. 17

## Single DMD lens HMD

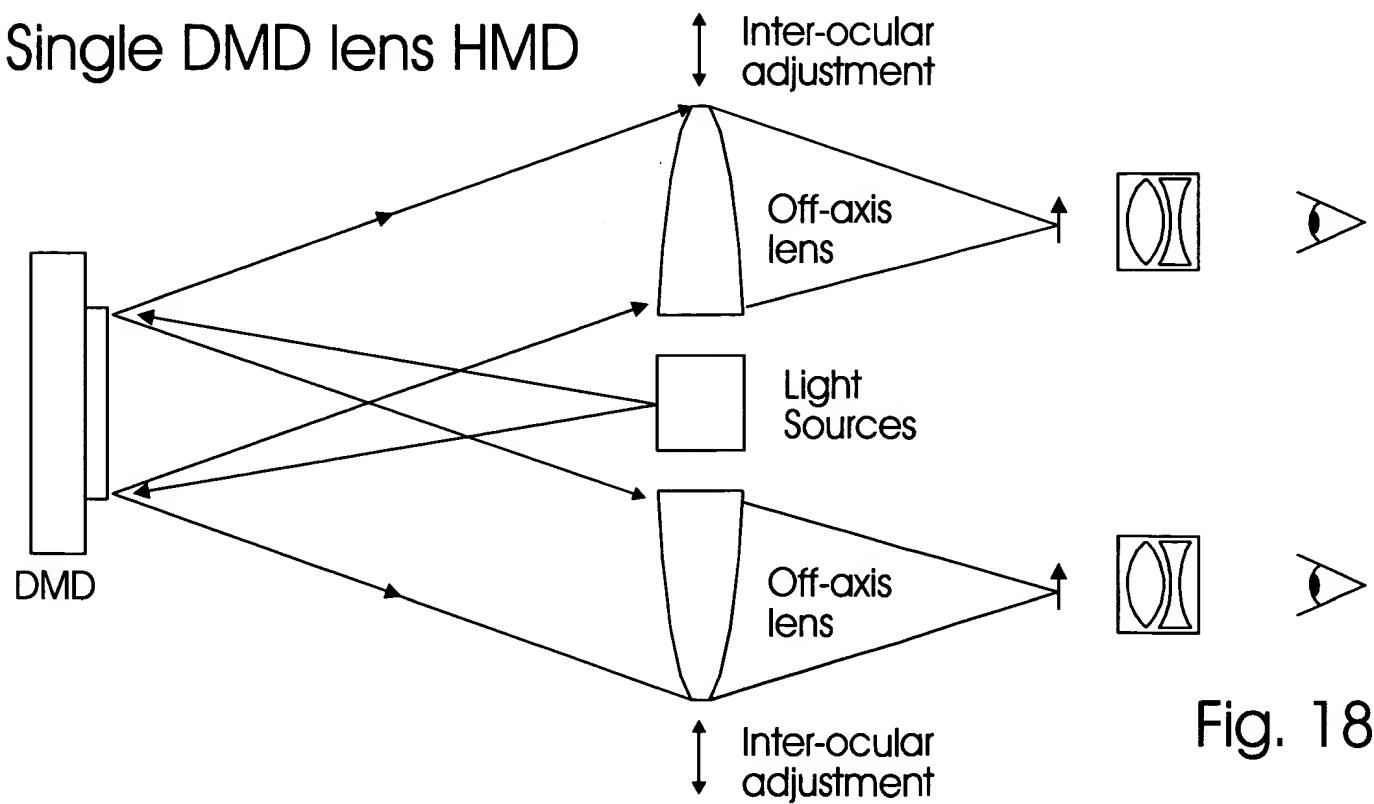


Fig. 18



## Prismatic lens design

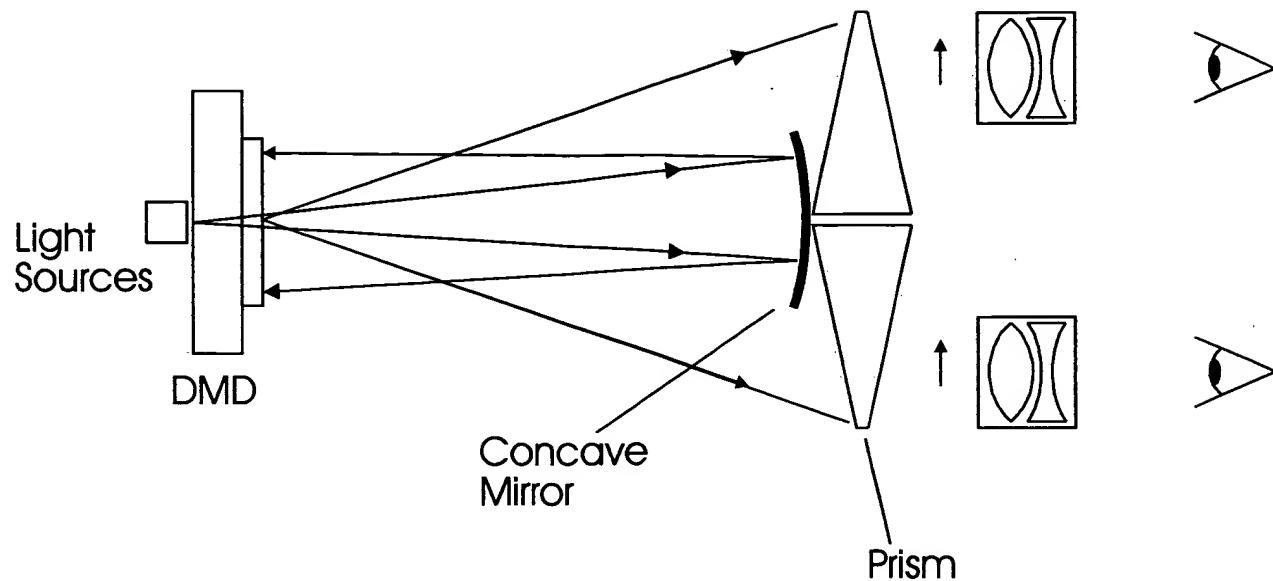


Fig. 19

## Binocular lens design

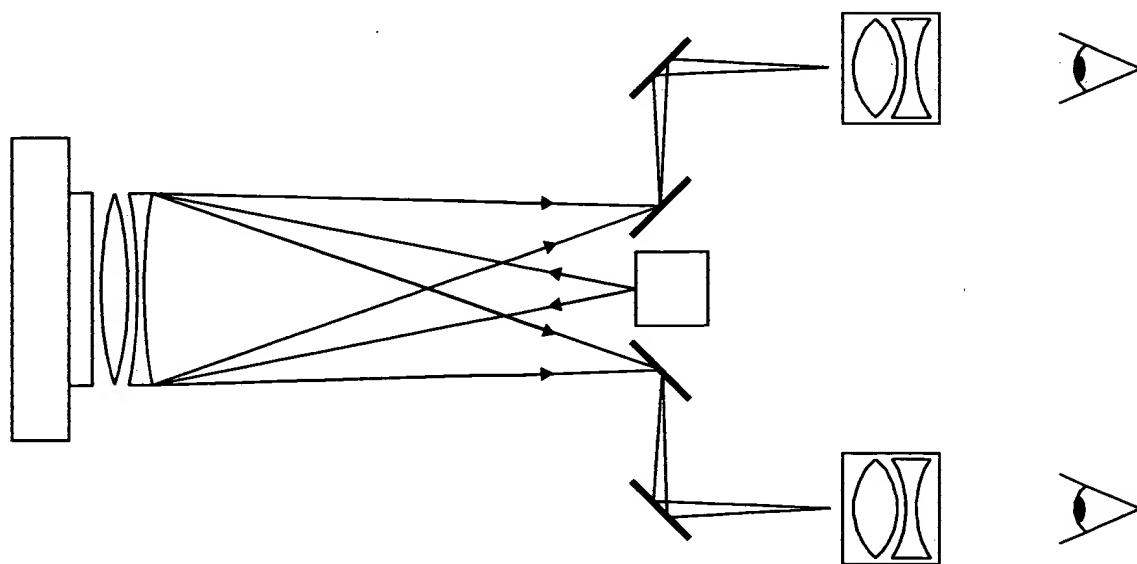


Fig. 20



# Single stage hybrid lens system

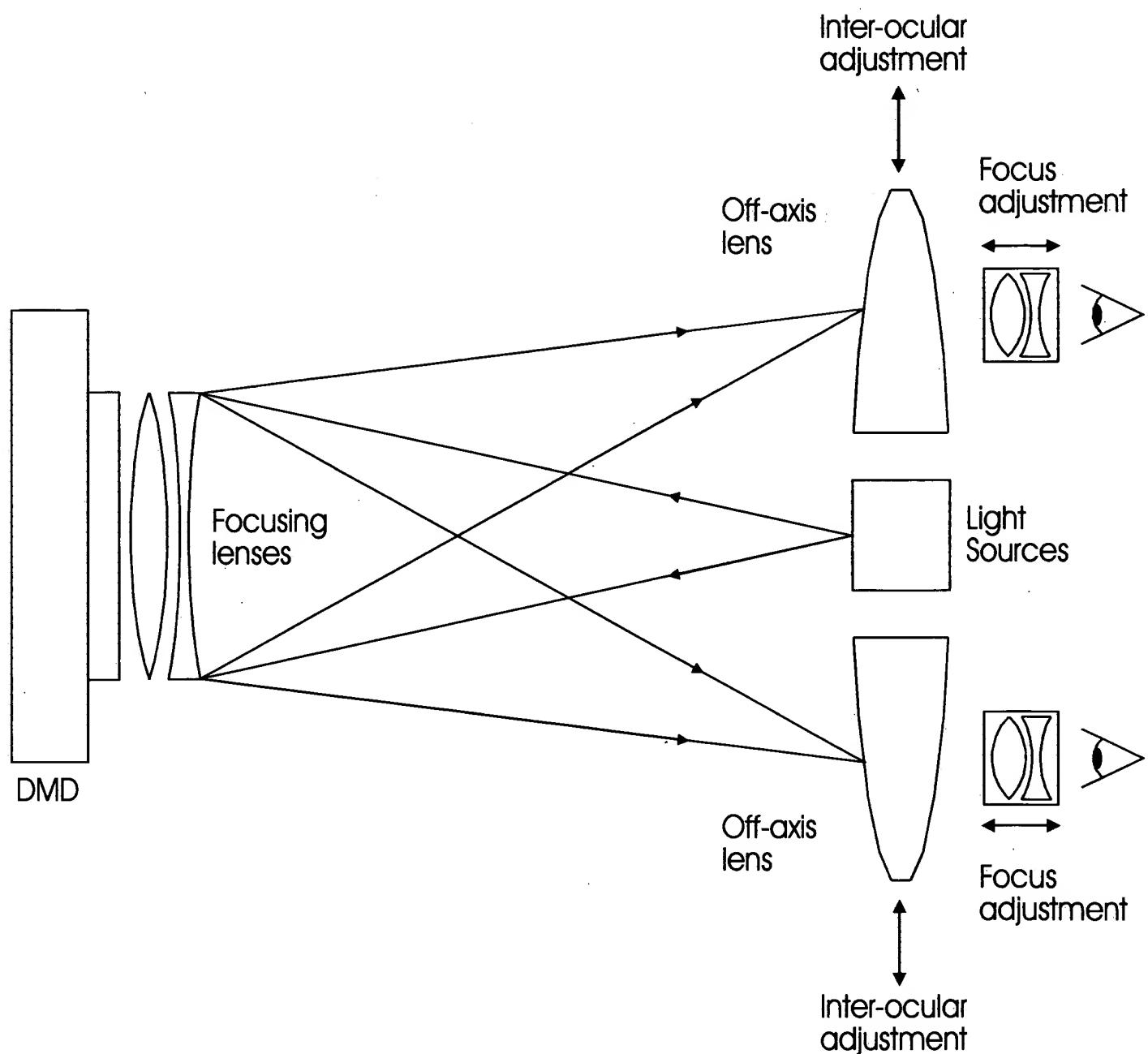


Fig. 21



## 2 stage hybrid lens system (preferred embodiment)

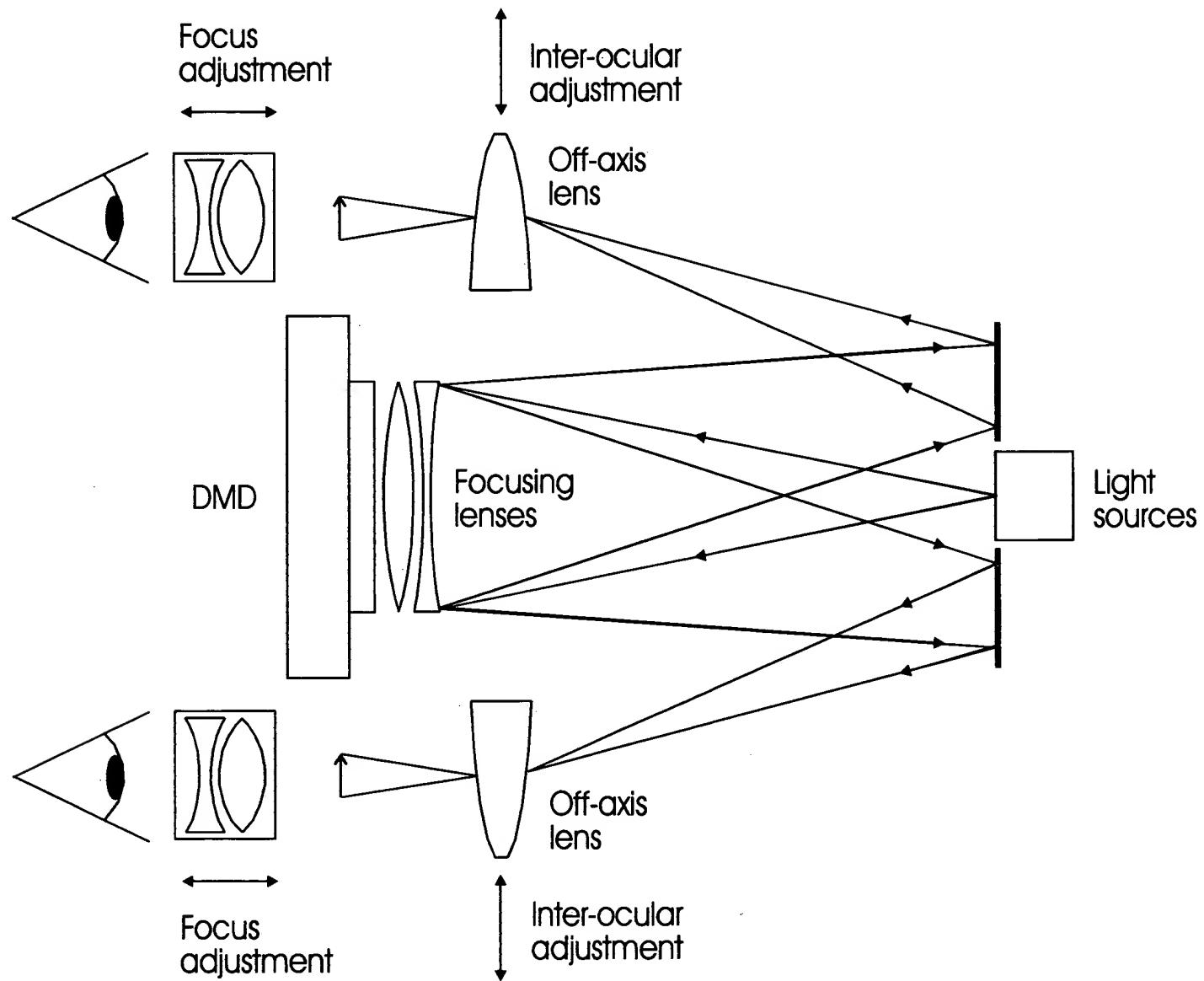


Fig. 22

DEC 09 2002 Lens HMD enhancements

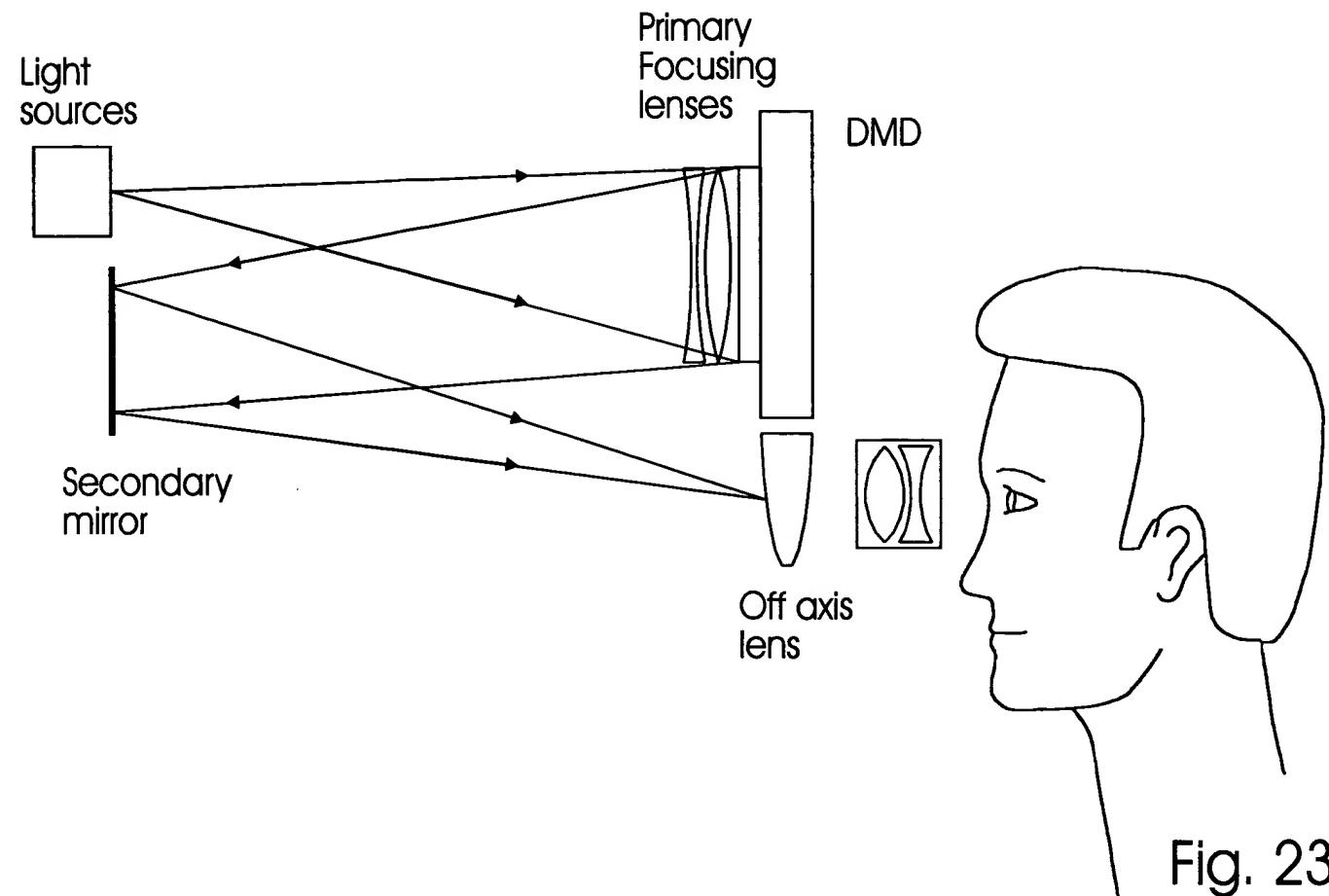


Fig. 23

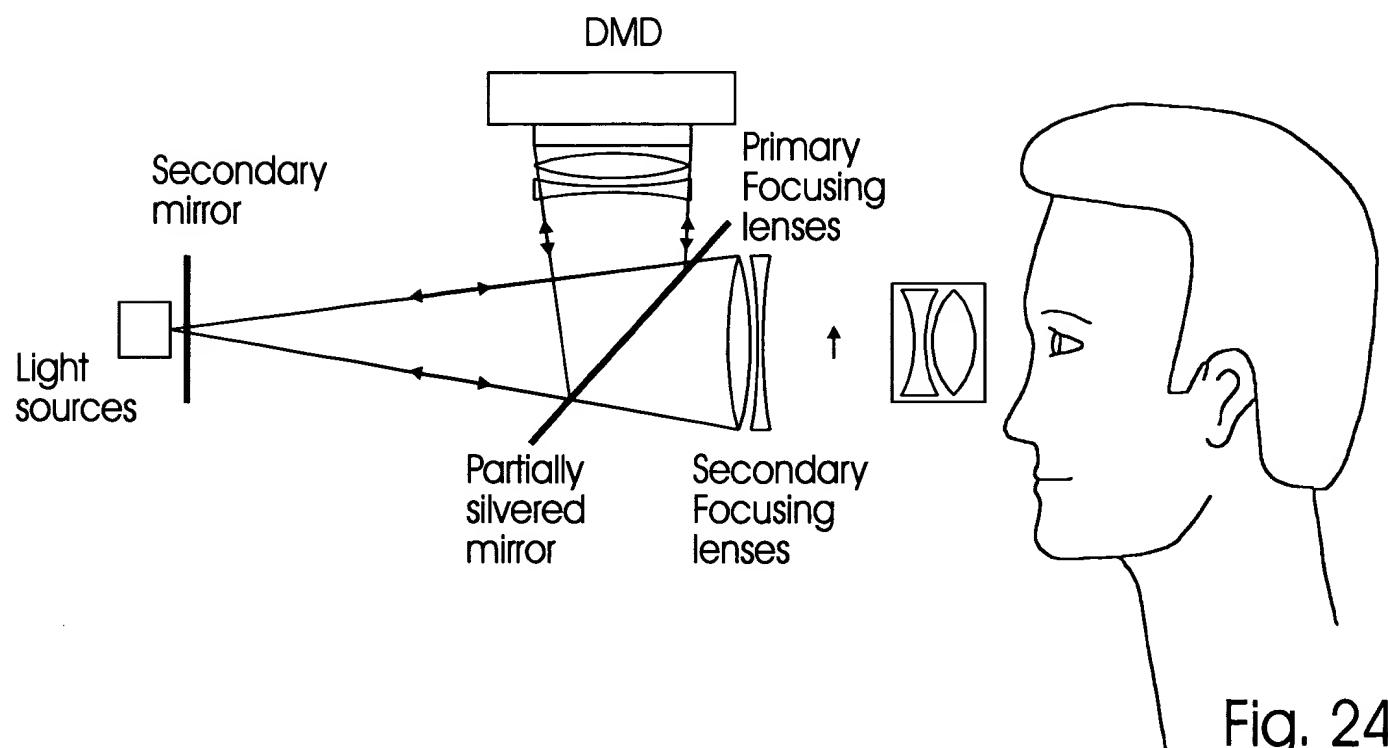


Fig. 24



# Light sources

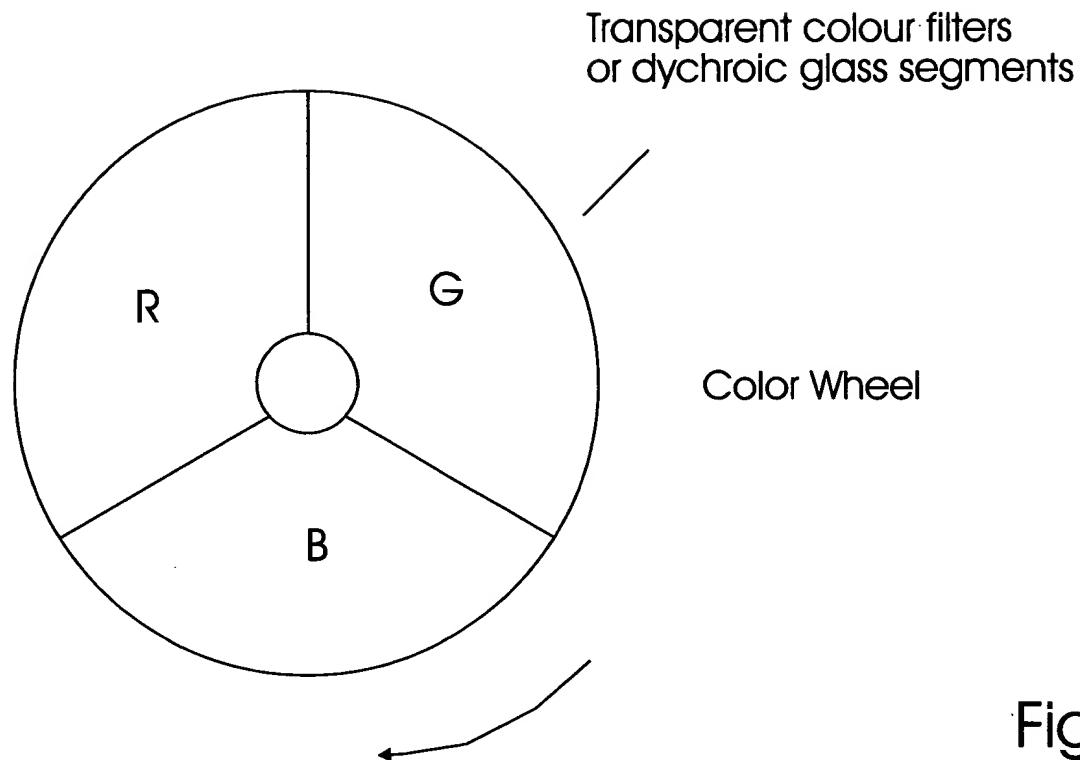


Fig. 25

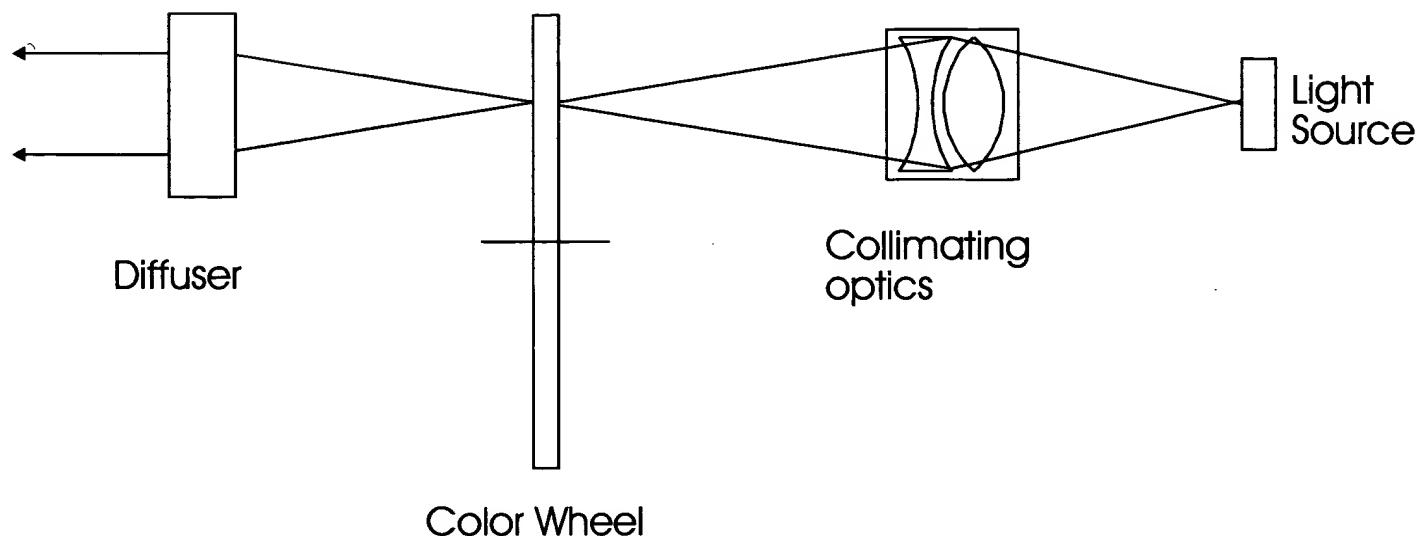


Fig. 26



# Light sources

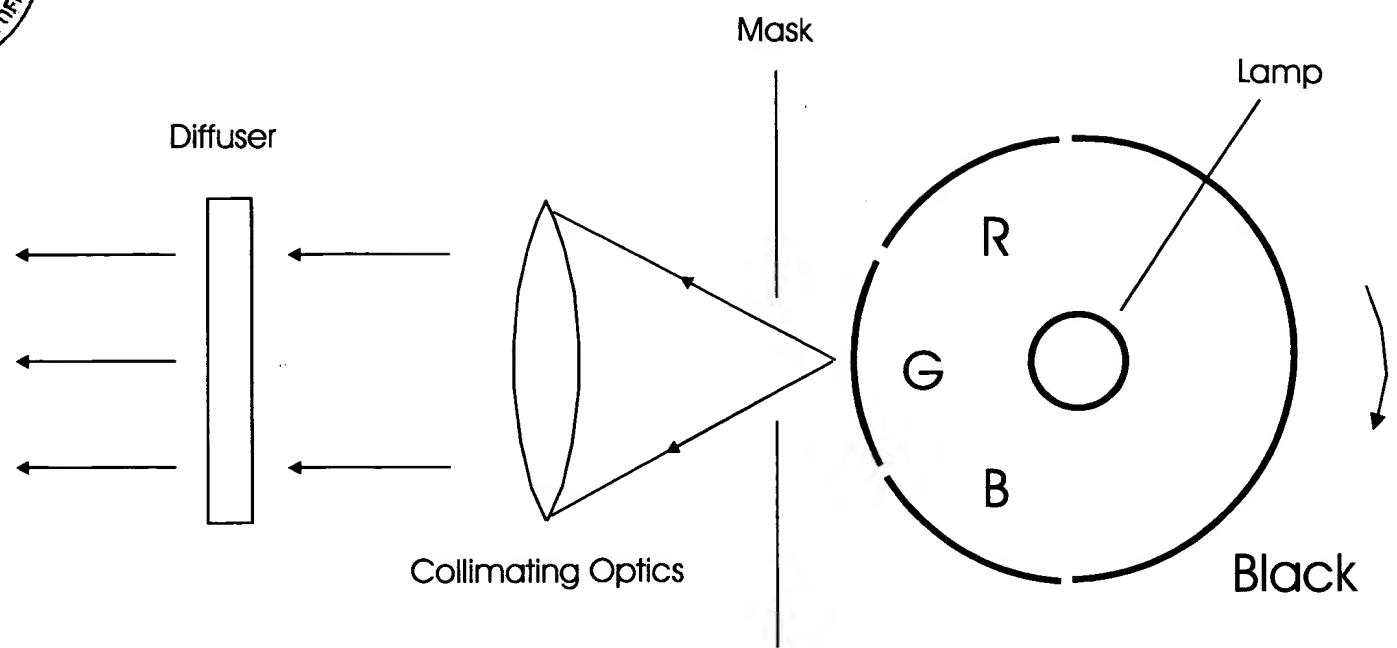


Fig. 27

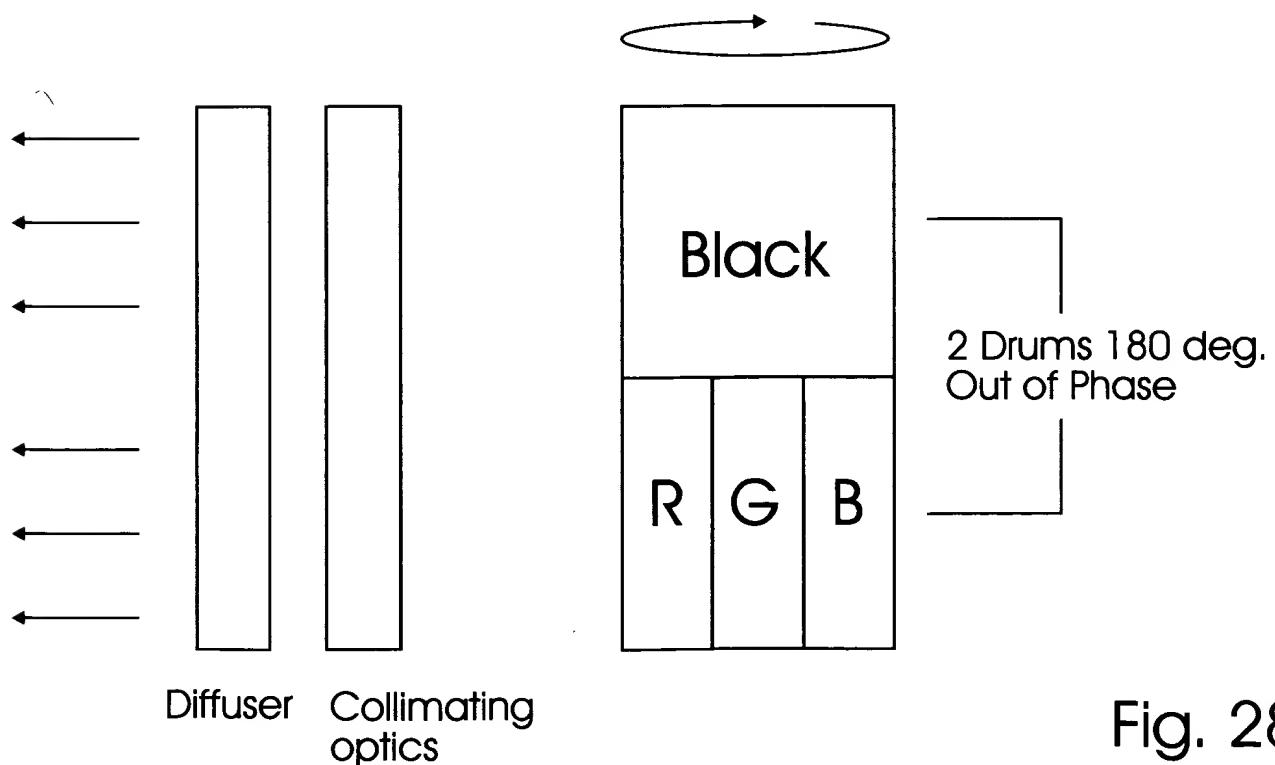
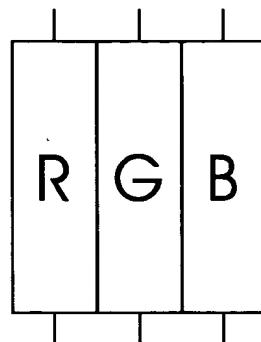


Fig. 28

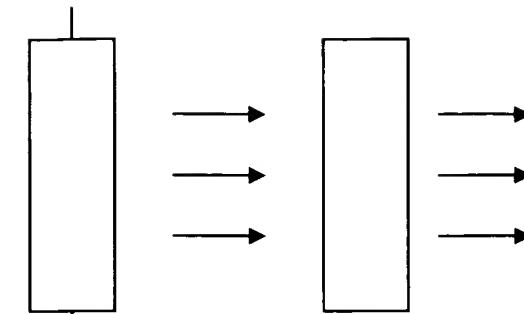


## Light sources



Light sources

Fig. 29 A



Light sources

Diffuser

Fig. 29 B

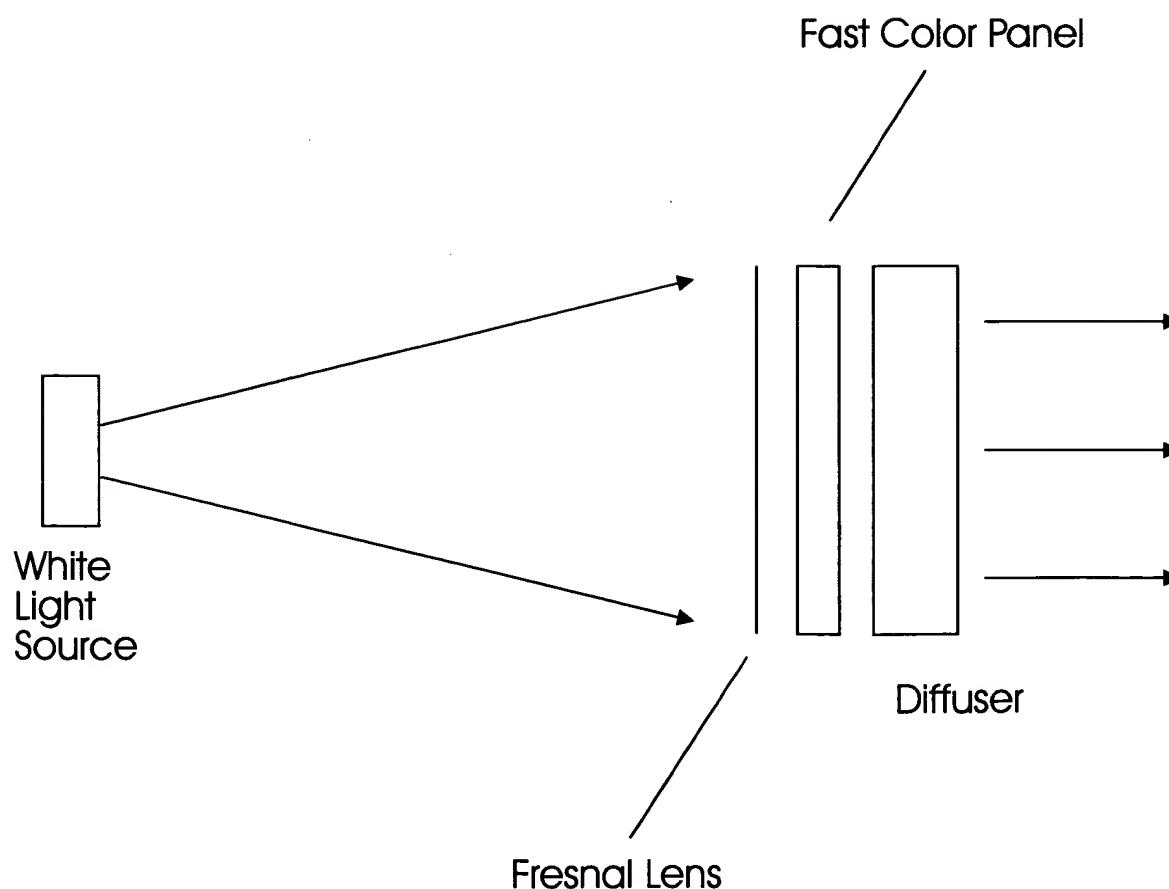


Fig. 30



# Light sources

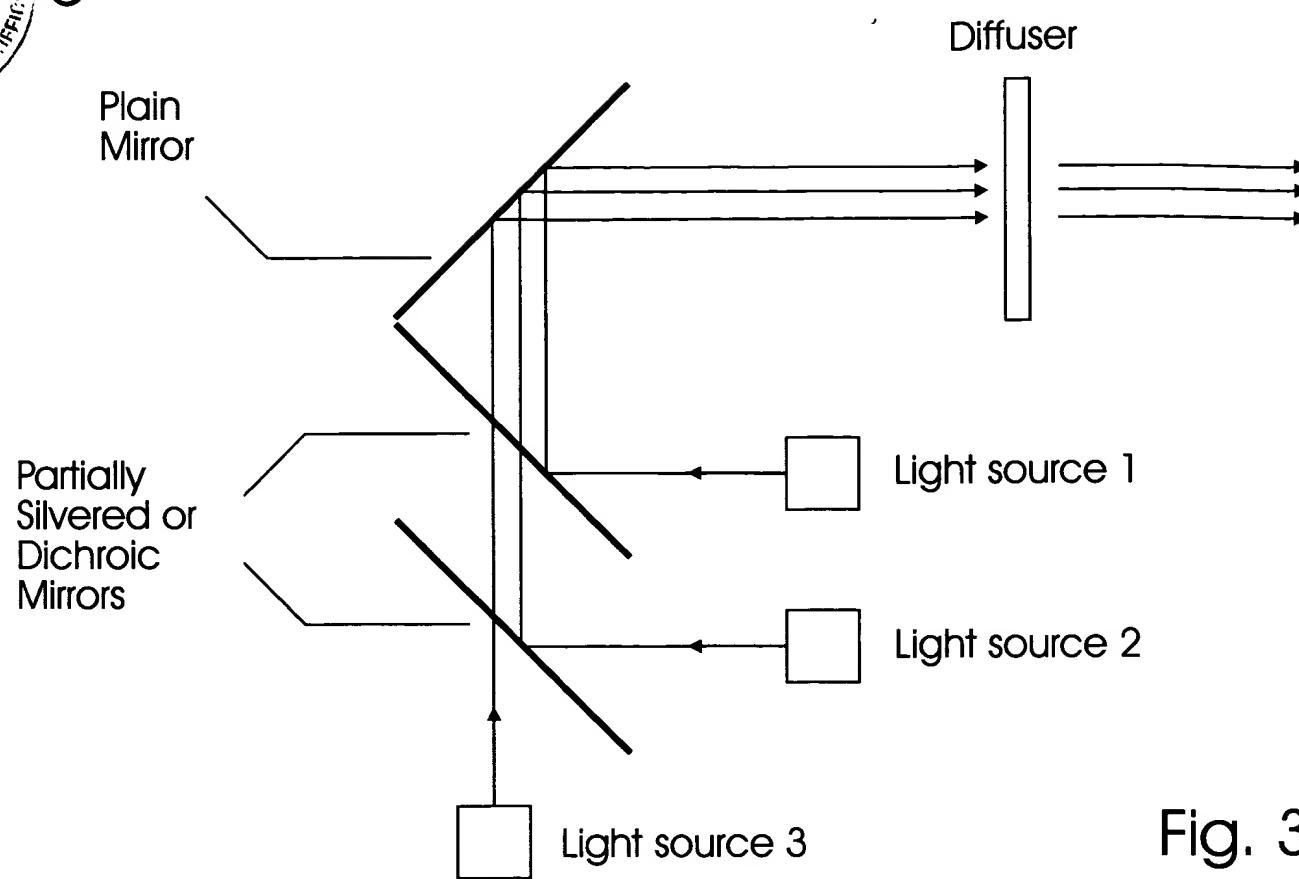


Fig. 31

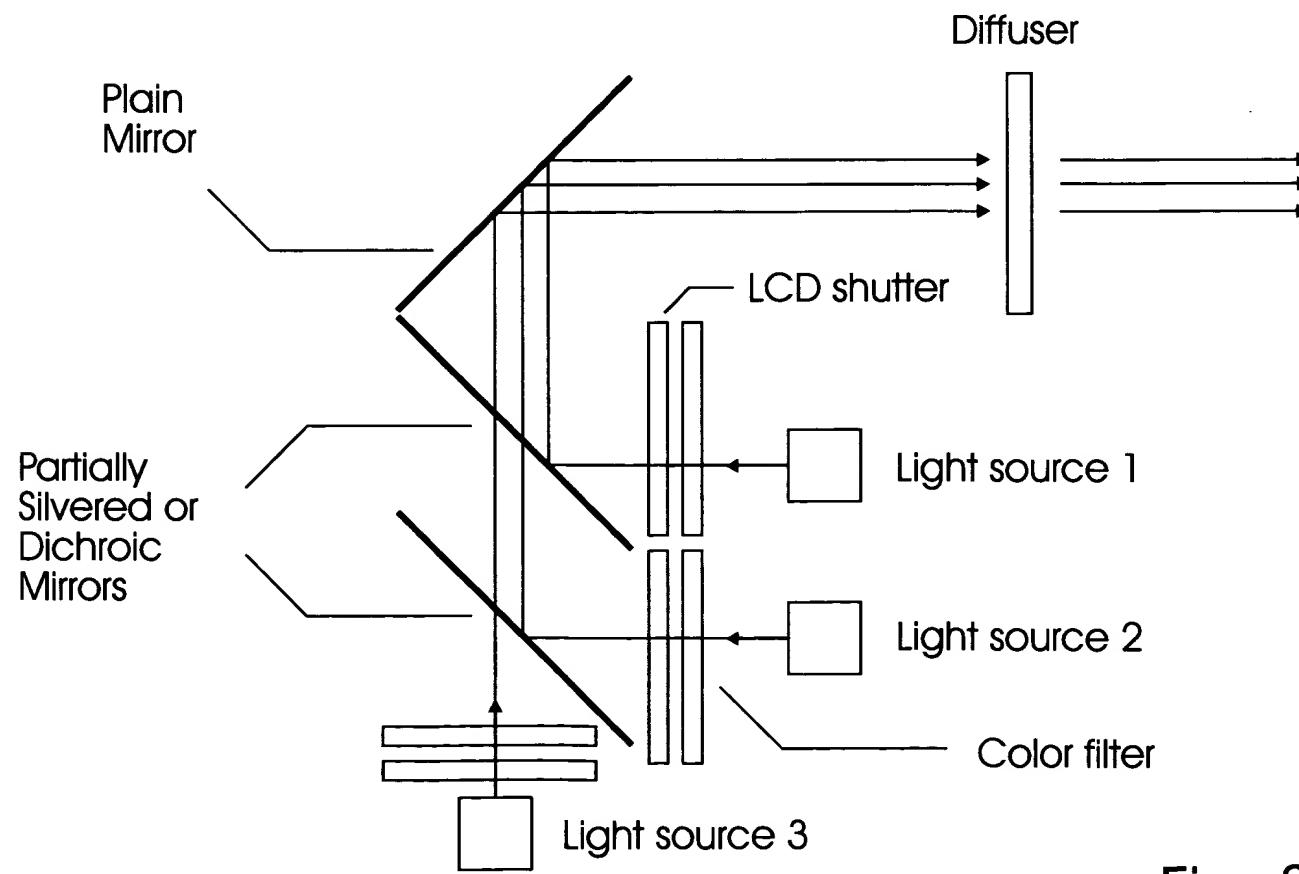


Fig. 32



# Light Sources

## LED Array-1 (Monochrome LEDs)

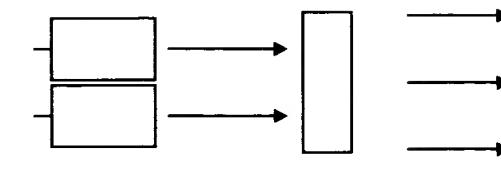
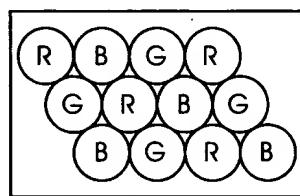


Fig. 33 A

Fig. 33 B

## R,G,B LED Array - 2

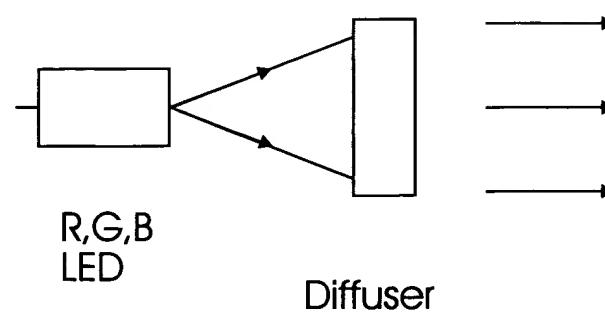
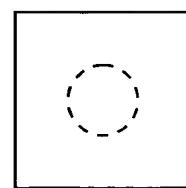


Fig. 34 A

Fig. 34 B

DEC 09 2002  
U.S. PATENT & TRADEMARK OFFICE

# Optical enhancements

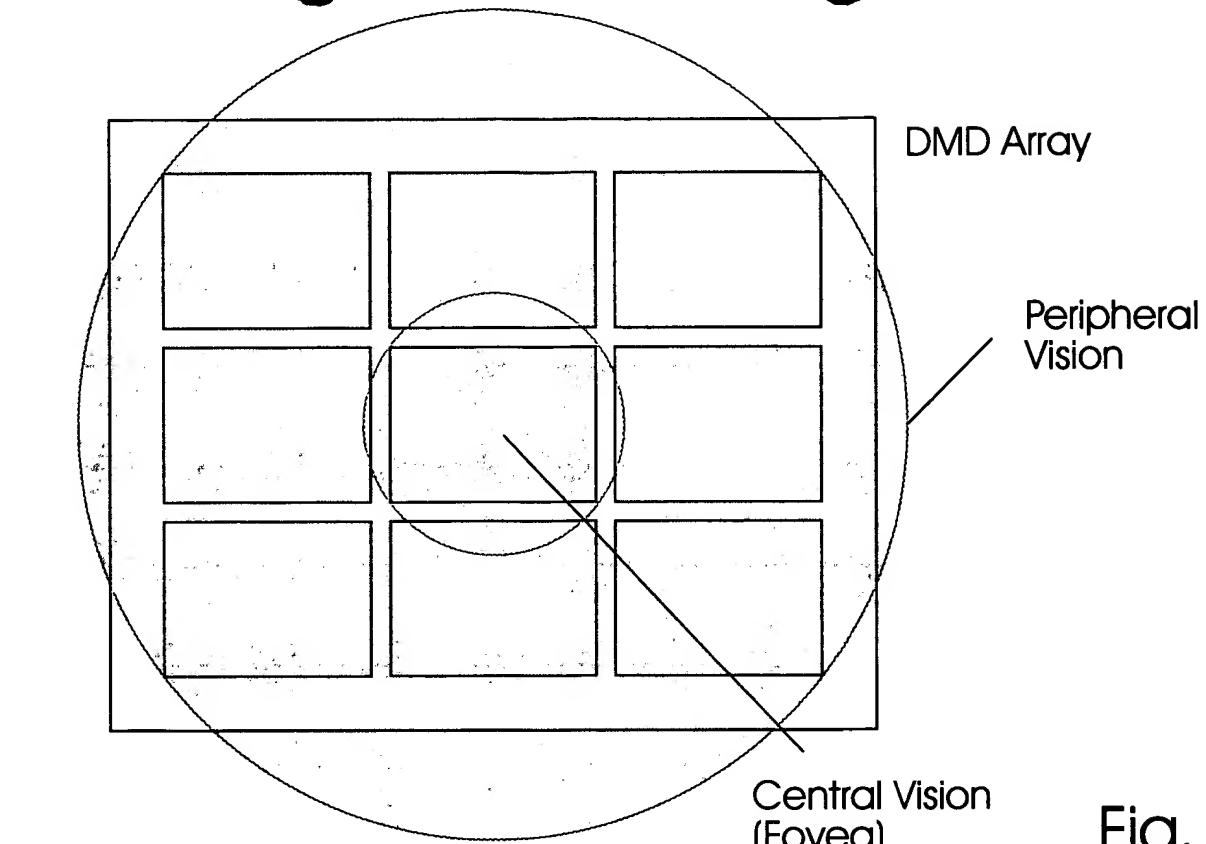


Fig. 35



Fig. 36



# Color space comparison

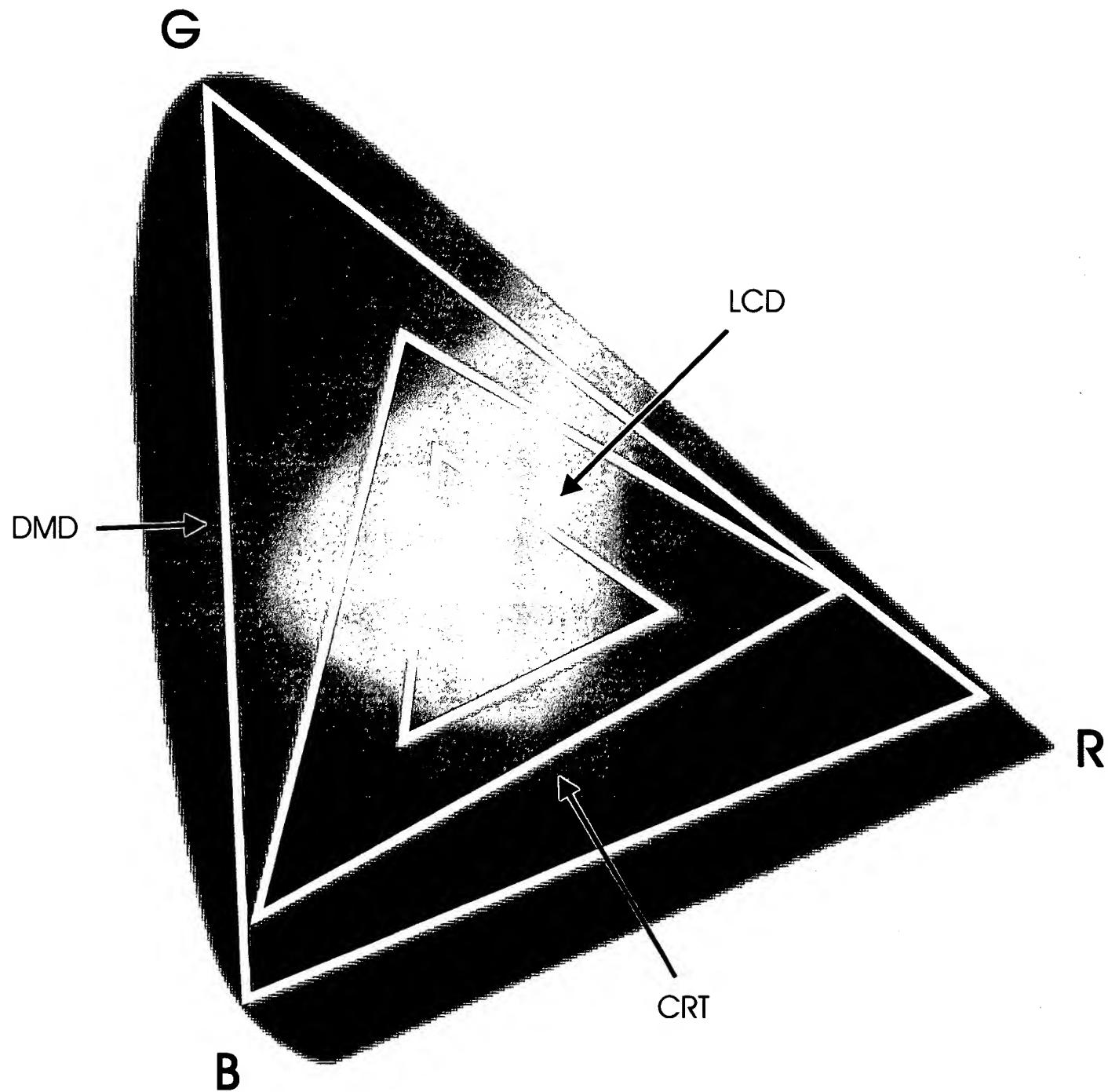


Fig. 37